



## Shell Oil Products US

Puget Sound Refinery

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October 21, 2020

Ms. Crystal Rau  
Northwest Clean Air Agency  
1600 South Second Street  
Mount Vernon, WA 98273-5202

Dear Ms. Rau,

Subject: Monthly Emissions, Deviation and MACTII Report for September 2020  
WAC 173-400/WAC 173-401/NWAPA 300 & MACT 63.1575(c-f)

Enclosed you will find the subject report for the Shell Oil Products US, Puget Sound Refinery. The report includes an emissions summary, a Deviation Report per AOP Term #2.4.7 and a continuous emission monitoring system (CEMS) Quality Assurance Report.

In addition, this report covers the semiannual reporting requirements of Refinery MACTII 63.1575(c-f) for the FCCU, SRU and CRU.

Please contact Mr. Tim Figgie at (360) 293-1525 if you should have any questions regarding this report.

Based on information and belief formed after reasonable inquiry, I certify that the statements and information enclosed are true, accurate, and complete.

Sincerely,

A handwritten signature in black ink that reads "John W White".

John White  
General Manager

Attachments

TCF

cc: Air Toxics Coordinator - Office of Air Quality  
US-EPA Region 10  
1200 Sixth Ave  
Seattle, WA 98101

September 2020

**Deviations** (per AOP Permit Term #2.4.7)

1. Permit Term 5.11.2 & .10: See attached Excess Emissions Report for September 29, 2020

**Startup/Shutdown**

1. Permit Term: none.

**Pending Investigation Reports**

1. Permit term: None

**OMMP Changes:** Update when Maintenance or Monitoring systems on the FCCU, SRU, CRU or Flares change

Last Updated: December 19, 2017

Sep 2020

## SHELL OIL PRODUCTS - PUGET SOUND REFINERY

	PARAMETER	LIMIT
<b>1. PLT TOTAL SO<sub>2</sub> EMISSIONS</b>		<b>lbs/hr/month</b>
Fuel Gas	5.0	
Low Sulfur Distillate	0.0	YTD Hrs: 0 (Max is 4-hrs/yr for training)
FCCUWGS	30.4	
Plant Flares	2.0	
SRU/TGTU Stack	10.0	
Other SO <sub>2</sub> Emissions	0.0	
<b>TOTAL</b>	<b>47</b>	<b>2100</b>
<b>2. POUNDS SO<sub>2</sub> / MMBTU</b>		<b>Monthly</b>
Pounds SO <sub>2</sub> / mmbtu	0.01	1.5
MMBTU per Month	2295105	
<b>3. FCCU EMISSIONS</b>		<b>Monthly Tons</b>
SO <sub>2</sub> Total from WGS	11.0	159
NO <sub>x</sub> WGS Permit Limit <sup>1</sup>	44.2	553
CO Total from the WGS	2.3	39
PM-10 Total from the WGS <sup>2</sup>	5.1	81
<b>4. SULFUR RECOVERY UNIT</b>		<b>12-mo RA Tons</b>
Sulfur Production, LT/Day	89	
SRU tons of SO <sub>2</sub> Emissions	42.7	53 Tons
<b>5. NO<sub>x</sub> LIMITS</b>		<b>12-mo RA Tons</b>
DCU 15-F100	18	39.5 cal
VPS 1A-F8	12	21 rol
VPS 1A-F4	17	41 rol
VPS 1A-F5/F6	66	164 rol

1 The permit limit for NOx only includes emissions from the Regen and fuel gas up to a firing rate of 65 mmbtu/hr for full combustion and 30 mmbtu/hr for partial combustion. Fuel gas firing above the 65 or 30 is for steam production and is not considered part of the regenerator process. See OAC 623f.

2 All particulate is assumed to be PM-10 particulate. Monthly Tons based on most current source test data plus any upset emissions.

**Cogen Unit Emissions Summary**

Sep 2020	GTG1	GTG2	GTG3
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**Turbine Operation**

Hours	213	720	720
Days of Duct Burning	1-NG; 7-MRG	0-NG; 30-MRG	0-NG; 30-MRG

**MSCF/HR to Each Turbine**

FCCU Gas (MRG)	51.9	174.5	178.5
Natural Gas	97.2	326.6	334.1
Duct Burners (MRG+NG)	27.4	50.0	44.4

**MMBTU/hr contribution to each turbine**

Turbines	148.7	499.5	510.9
Duct Burners	26.0	46.7	41.5

**Emission Rate, lb/hr (Calendar Month Average)**

NOx	7	21	16
CO	2	1	6
SO2	0.2	0.8	0.1
NH3 Slip, lb/hr	0.0	0.6	0.5

**TONS, 12-Month Rolling Total (Limits: SO2 - 55; PM10 - 18)**

SO2	na	na	1.3
PM10	na	na	1.3

**Highest Hourly (daily for NOx) ppm corrected to 15% O2 (excludes startups/shutdowns per permit)**

NOx - 24-hr avg	10.8	11.0	7.9
CO - 1-hr avg	4.8	0.8	5.9
SO2 - 3-hr rolling	0.3	0.5	2.0
NH3 Slip - 24-hr avg	3.2	0.9	0.8



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Air Operating Permit  
Excess Emissions Report  
Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	Sept 29, 2020	Incident type: breakdown/ upset/startup or shutdown	Upset
Start Date	Sept 29, 2020	Start Time:	10:00 AM
End Date	Sept 29, 2020	End Time:	11:30 AM
Process unit or system(s): Flare			

Incident Description

On Tuesday September 29, 2020, at about 10:00am FCCU Operations was switching Lube oil pumps on the wet gas compressor (WGC) as part of the regular maintenance routine. During the switch the oil pressure dropped causing the automated protective system to shut down the WGC. The loss of lube oil pressure was caused by the spare pump losing its prime due to a failed check valve. Without the WGC running the fractionator overhead controls opened to vent gas off to the flare system, safely controlling the unit pressure. This sent high flare flow to all 3 flares, resulting in exceedance of visible emissions for more than 5mins/2hrs from the north and south flare, and one NHV 15min block period from 11:15 – 11:30 below the 270 btu/cf minimum. The NHV reading was 255, just below the minimum, and occurred at the tail end of the flare event as the flow was rapidly dropping off with only a portion of this 15min block having higher flare gas flow. With the low gas flow and baseline steam requirements, the NHV could not be maintained because there is no supplemental gas capability on the north and south flares. This event also resulted in the total flow and lbs of SO2 going above the 24hr rolling average reporting thresholds, which then requires this incident report. The release amounts were 832 lbs SO2 and 420 mscf flow. PSR also discovered that the south flow meter was not working properly as it showed very minimal flow while flame was visible at the flare tip. The south flare flow meter has been repaired. Estimated flow, based on a mass balance calculation, is a total of 241mscf of gas through the south flare. This volume was included in the above total SO2 and flow values.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

FGR recovered as much excess flare flow as possible.

Applicable air operating permit term(s): 5.11.2, .10 & .13

Estimated Excess Emissions:  Based on flare flow meters & eng calculations	Pollutant(s): visible emissions and NHV	Visible emissions for 7.5mins & 5.3mins per 2-hour period, on the north and south flare, respectively; one 15min block average period on the N flare
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The incident was the result of the following (check all that apply):

- Scheduled equipment startup
- Scheduled equipment shutdown
- Poor or inadequate design
- Careless, poor, or inadequate operation
- Poor or inadequate maintenance
- A reasonably preventable condition

Did the facility receive any complaints from the public?

- No
- Yes (provide details below)

PSR received complaints from the Swinomish Tribal community and other area community members. PSR's Industrial Hygienist conducted area monitoring and found no detectable H2S or SO2 readings in the surrounding community.

Did the incident result in the violation of an ambient air quality standard

- No
- Yes (provide details below)

Root and other contributing causes of incident:

Automatic safety shutdown system activation due to loss of lube oil pressure that was caused by a failed check valve

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- Identified for the first time
- Identified as a recurrence (explain previous incident(s) below - provide dates)

Automatic safety shutdown system activation due to loss of lube oil pressure that was caused by a failed check valve

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- No
- Yes (describe below)

The initiating event was the result of the WGS automatic safety shutdown system activation due to loss of lube oil pressure that was caused by a failed check valve, which would be considered a malfunction. The NHV exceedance was the result of the nature of the NHV calculation with high flare flow not being present for the full 15min block period and the lack of supplemental gas on the north flare.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2

Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

To prevent a reoccurrence of this event the procedure for switching lube oil pumps was updated

Air Operating Permit  
Excess Emissions Report Form Part II  
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to require additional checks of the lube oil system pressure prior to shutting off the previously operating pump.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing?  No  Yes

Is the source requesting additional time for completion of the report?  No  Yes

*Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.*

Prepared By: John Montgomery/Tim Figgie Date: Oct 14, 2020

Responsible Official or Designee: John W. White Date: 10-21-20

Summary Report- Gaseous and Opacity Excess Emission and Monitoring System Performance

Reporting Period: 09/01/20 to 09/30/20

Process unit	Manufacturer/ Model#/ Serial#	Pollutant	Total Source Operating Time in Period(hrs)	Emission Data Summary					CEMS Performance Summary									
				Duration (Hours) of Excess Emission Due to:					CEMS Downtime (Hours) in Reporting Period Due to:									
				Start-Up/Shutdown	Control Equipment Problems	Process Problems	Other Known Causes	Unknown Causes	Total Duration of Excess Emissions	Excess Emission Duration (% of time)	Monitor Equipment Malfunctions	Non-Monitoring Equipment Malfunctions	zero and span checks	quarterly audit	Quality Assurance Calibration	Other Known Causes	Unknown Causes	Total CEMS Downtime
VPS F5-F6 (1AR200)	Thermo Env 42l 1204851744	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
VPS F5-F6 (1AR201)	Siemens Oxyamat 61 F-Nr.N1-S8-0867	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
VPS F4 (1AR210)	Thermo Env 42l 1134150804	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
VPS F4 (1AR211)	Siemens Oxyamat 61 F-F-Nr.-N1-T6-0958	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 1 (7AR303)	Thermo Env 43C HL 43i-1332459801	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 1 (7AR304)	Siemens Oxyamat 6E 7mb20011ea00-0DA1	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 2 (11AT33)	Siemens Maxum II 30025319290200	H2S	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
HTU 3 (60AI875)	Siemens Maxum II 5061350001	H2S	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 3 (16AR677)	Thermo Env 43l 1414861701	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 3 (16AR676)	Siemens Oxyamat 6 NI-69-0154	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 4 (18AR990A)	Thermo Env 43C 0332903168	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
SRU 4 (18AR988A)	Siemens Oxyamat 61 F-NR.N1-T3-0800	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Plant Fuel Gas (35AT19)	Siemens Maxum II 30025319290100	H2S	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
East Flare (19AR11)	Thermo Env 43l1163620045	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
East Flare (19AI9)	Siemens Maxum II 30021223630010	H2S	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI330b)	Thermo Env 48l 0904234786	CO	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI329b)	Thermo Env 42l HL-0820430989	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI326b)	Thermo Env 43hl 1006147338	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
Wet Gas Scrubber (3AI327b)	Siemens Oxyamat 6 7mb2023-1ca200cr1	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-

Excess Emissions Detail

N/A	
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Monitor Downtime/Out-of-Control Detail

Process Unit	Problem Description	Corrective Action	Start	End	Total Hrs.
N/A					

## CGA

Process Unit	Pollutant	Audit Date	Audit Point	Cylinder ID	Date of Cert.	Certified Audit Value	CEM Response Value	Accuracy Average(%)
VPS F5-F6 (1AR201)	NOx	8/24/2020	1	cc69684	7/16/2013	61.8	60.48	-2.14
			2	eb0054136	7/7/2017	143.5	134.47	-6.29
VPS F5-F6 (1AR201)	O2	8/24/2020	1	cc78966	7/17/2013	6.27	6.1	-2.71
			2	cc60777	7/17/2013	13.8	13.5	-2.17
VPS F4 (1AR210)	NOx	8/24/2020	1	cc69870	7/16/2013	61.8	58.67	-5.06
			2	cc53549	7/16/2013	138	145.33	5.31
VPS F4 (1AR211)	O2	8/24/2020	1	eb-0041779	9/24/2015	6.2	6.03	-2.74
			2	cc-165620	9/24/2015	13.69	13.67	-0.15
HTU 1 (7AR303)	SO2	5/11/2020	1	cc467680	9/20/2018	13.92	13.84	-0.57
			2	eb0037352	9/12/2018	29.04	27.7	-4.61
HTU 1 (7AR304)	O2	5/11/2020	1	cc467680	9/20/2018	5.99	6.08	1.50
			2	eb0037352	9/12/2018	13.77	13.98	1.53
HTU 2 (11AT33)	H2S	8/24/2020	1	eb-0074134	3/19/2020	75.9	74.69	-1.59
			2	eb-0078450	3/19/2020	167	160.63	-3.81
HTU 3 (60AI875)	H2S	8/24/2020	1	eb-0074134	3/19/2020	75.9	76.49	0.78
			2	eb-0078450	3/19/2020	167	162.94	-2.43
SRU 3 (16AR677)	SO2	9/3/2020	1	cc-502169	2/6/2019	399.3	395.33	-0.99
			2	eb-005412	2/12/2019	924.5	907.23	-1.87
SRU 3 (16AR676)	O2	9/3/2020	1	cc-502169	2/6/2019	6.2	6.2	0.00
			2	eb-005412	2/12/2019	13.54	13.5	-0.30
SRU 4 (18AR990A)	SO2	9/1/2020	1	cc-454512	2/6/2019	396.7	393	-0.93
			2	eb-0019735	2/12/2019	908.3	873.33	-3.85
SRU 4 (18AR988A)	O2	9/1/2020	1	cc-454512	2/6/2019	6.24	6.3	0.96
			2	eb-0019735	2/12/2019	13.76	13.8	0.29
Plant Fuel Gas (35AT19)	H2S	8/24/2020	1	eb-0074134	3/19/2020	75.9	72.38	-4.64
			2	eb-0078450	3/19/2020	167	162.71	-2.57
East Flare (19AR11)	SOx	8/24/2020	1	eb-0048107	3/1/2019	2.504	2.70	7.83
			2	cc-409365	3/1/2019	5.509	5.75	4.37
East Flare (19AI9)	H2S	8/24/2020	1	eb-0074134	3/19/2020	75.9	68.58	-9.64
			2	eb-0078450	3/19/2020	167	152.6	-8.62
WGS (3AI330b)	CO	9/1/2020	1	cc-162057	8/5/2019	259.3	267.3	3.09
			2	eb-0019730	8/5/2019	564.3	577.38	2.32
WGS (3AI326b)	SO2	9/1/2020	1	cc-162057	8/5/2019	25.77	24.79	-3.80
			2	eb-0019730	8/5/2019	56.25	59.85	6.40
WGS (3AI329b)	NOx	9/1/2020	1	cc-162057	8/5/2019	79.28	80.55	1.60
			2	eb-0019730	8/5/2019	170.1	162.27	-4.60
WGS (3AI327b)	O2	9/1/2020	1	cc-172788	7/9/2019	6.21	5.99	-3.54
			2	eb-0021523	7/9/2019	13.95	14.62	4.80

## Relative Accuracy Test Audits

Process Unit	Pollutant	Audit Date	Reference Method	Absolute Mean Difference	Confidence Coefficent	CEMSValue	Ref. Method Value	Relative Accuracy(%)
VPS F5-F6 (1AR200)	NOx	2/5/2020	NOx (ppmv) Spec2	6.45	0.259	58.11	64.56	10.4
VPS F5-F6 (1AR200)	NOx	2/5/2020	NOx (lb/mmbtu) Spec2	0.0061	0.00027	0.0605	0.0666	9.6
VPS F5-F6 (1AR200)	NOx	2/5/2020	NOx (lb/hr) Spec2-M19	1.91	0.086	18.92	20.83	9.6
VPS F5-F6 (1AR201)	O2	2/5/2020	Spec3	0.09	0.016	8.39	8.48	0.1
VPS F4 (1AR210)	NOx	11/26/2019	NOx(ppmv) Spec2	0.7	1.503	35.3	36	6.1
VPS F4 (1AR210)	NOx	11/26/2019	NOx (lb/MMBTU) Spec2	0	0.002	0.051	0.051	5.2
VPS F4 (1AR210)	NOx	11/26/2019	NOx (lb/hr) Spec2	0.03	0.232	5.45	5.48	4.7
VPS F4 (1AR211)	O2	11/26/2019	Spec3	0.06	0.019	5.85	5.79	0.1
HTU 1 (7AR303)	SO2	8/14/2020	Spec2	0.88	0.924	4.92	4.04	9
HTU 1 (7AR304)	O2	8/14/2020	Spec 3	0.02	0.103	4.18	4.83	0.1
HTU 2 (11AT33)	H2S	1/29/2020	Spec 7	2.13	0.365	2.03	4.16	1.5
HTU 3 (60AI875)	H2S	1/30/2020	Spec7	3.17	0.338	0.83	4	2.2
SRU 3 (16AR677)	SO2	11/20/2019	Spec2	16.7	6.89	180.4	197.1	3.1
SRU 3 (16AR676)	O2	11/20/2019	Spec3	0.1	0.032	9.79	9.68	0.1
SRU 4 (18AR990A)	SO2	2/6/2020	Spec2	16.46	3.82	90.01	73.54	8.1
SRU 4 (18AR988A)	O2	2/6/2020	Spec3	0.17	0.015	6.98	6.78	0.2
Plant Fuel Gas (35AT19)	H2S	1/28/2020	EPA Method 15	4.43	0.652	0.03	4.46	3.1
East Flare (19AR11)	SOx	N/A	EPA Method					
East Flare (19AI9)	H2S	11/7/2019	EPA Method 15	1.98	0.099	-0.07	1.91	1.3
WGS (3AI330b)	CO	2/25/2020	Method 10 PS-4	9.1	0.337	10.35	1.24	1.9
WGS (3AI329b)	NOx	2/25/2020	Method 7E PS-2	1.8	1.54	154.8	153	2.2
WGS (3AI326b)	SO2	2/25/2020	Method 6C PS-2	2.26	1.038	24.15	21.89	6.6
WGS (3AI327b)	O2	2/25/2020	Method 3A PS-3	0.06	0.028	2.75	2.81	0.1

Summary Report- Gaseous and Opacity Excess Emission and Monitoring System Performance

Reporting Period: 09/01/20 to 09/30/20

Process unit	Manufacturer/ Model #/Serial#	Pollutant	Total Source Operating Time in Period	Emission Data Summary					CEMS Performance Summary									
				Duration (Hours) of Excess Emission Due to:					CEMS Downtime (Hours) in Reporting Period Due to:									
				Start-Up/Shutdown	Control Equipment Problems	Process Problems	Other Known Causes	Unknown Causes	Total Duration of Excess Emissions	Excess Emission Duration (% of time)	Monitor Equipment Malfunctions	Non-Monitoring Equipment Malfunctions	zero and span checks	quarterly audit	Quality Assurance Calibration	Other Known Causes	Unknown Causes	Total CEMS Downtime
GTG #1 (90AR106B)	Thermo Env 43C 505064533	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR105B)	Thermo Env 48C 1162730028	CO	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR103B)	Thermo Env 42C 11505600038	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR108B)	Thermo Env 42C 74018-375	NH3	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #1 (90AR104)	Sevomex 1400 014200-3002	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR206B)	Thermo Env 43C 70679-366	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR205B)	Thermo Env 48IQ 1190952402	CO	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR203B)	Thermo Env 42I 1136451127	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR208B)	Thermo Env 42I 1134150805	NH3	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #2 (90AR204)	Sevomax 1400 014200-3009	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR306B)	Thermo Env 43C 65005-345	SO2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR305B)	Thermo Env 48C 70730-336	CO	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR303B)	Thermo Env 42C 1334760016	NOx	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR308B)	Thermo Env 42C 11706000008	NH3	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-
GTG #3 (90AR304)	Sevomex 1400 014200-3010	O2	720	-	-	-	-	-	0	-	-	-	16	-	-	-	0	-

Excess Emissions Detail

N/A	
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Monitor Downtime/Out-of-Control Detail

Process Unit	Problem Description	Corrective Action	Start	End	Total Hrs.
N/A					

Cylinder Gas Audits

Process Unit	Pollutant	Audit Date	Audit Point	Cylinder ID	Date of Cert.	Certified Audit Value	CEM Response Value	Accuracy Average(%)
GTG #1 (90AR104)	O2	9/1/2020	1	cc-59314	7/9/2019	6.08	5.94	-2.30
			2	eb-0022180	7/9/2019	13.54	13.3	-1.77
GTG #1 (90AR103B)	NOx	9/1/2020	1	eb-0048059	3/20/2019	7.21	7.02	-2.64
			2	rr-00166	3/25/2019	16.05	16.1	0.31
GTG #1 (90AR108B)	NH3	9/1/2020	1	eb-0048059	3/20/2019	7.21	7.18	-0.42
			2	rr-00166	3/25/2019	16.05	16.23	1.12
GTG #1 (90AR106B)	SO2	9/1/2020	1	eb-0048059	3/20/2019	10.5	9.98	-4.95
			2	rr-00166	3/25/2019	23.04	23.74	3.04
GTG #1 (90AR105B)	CO	9/1/2020	1	eb-0048059	3/20/2019	26.03	26.58	2.11
			2	rr-00166	3/25/2019	54.05	54.1	0.09
GTG #2 (90AR204)	O2	9/1/2020	1	eb-0015977	9/24/2015	6.18	6.41	3.72
			2	cc-88739	9/24/2015	13.7	13.8	0.73
GTG #2 (90AR208B)	NH3	9/1/2020	1	cc-508573	3/20/2019	7.25	7.16	-1.24
			2	eb-0024667	3/25/2019	16.52	16.06	-2.78
GTG #2 (90AR203B)	NOx	9/1/2020	1	cc-508573	3/20/2019	7.25	7.01	-3.31
			2	eb-0024667	3/25/2019	16.52	16.08	-2.66
GTG #2 (90AR206B)	SO2	9/1/2020	1	cc-508573	3/20/2019	10.25	9.69	-5.46
			2	eb-0024667	3/25/2019	21.91	23.13	5.57
GTG #2 (90AR205B)	CO	9/1/2020	1	cc-508573	3/20/2019	25.74	26.58	3.26
			2	eb-0024667	3/25/2019	56.69	54.06	-4.64
GTG #3 (90AR304)	O2	9/1/2020	1	eb-0018799	7/9/2019	6.37	6.65	4.40
			2	eb-0017930	7/9/2019	13.81	13.91	0.72
GTG #3 (90AR303B)	NOx	9/1/2020	1	cc-508453	3/20/2019	7.26	6.86	-5.51
			2	cc-502270	3/25/2019	16.39	15.94	-2.75
GTG #3 (90AR308B)	NH3	9/1/2020	1	cc-508453	3/20/2019	7.26	7.11	-2.07
			2	cc-502270	3/25/2019	16.39	16.02	-2.26
GTG #3 (90AR306B)	SO2	9/1/2020	1	cc-508453	3/20/2019	10.63	10.37	-2.45
			2	cc-502270	3/25/2019	22.35	21.48	-3.89
GTG #3 (90AR305B)	CO	9/1/2020	1	cc-508453	3/20/2019	25.44	25.97	2.08
			2	cc-502270	3/25/2019	54.66	52.19	-4.52

Relative Accuracy Test Audits

Process Unit	Pollutant	Audit Date	Reference Method	Absolute Mean Difference	Confidence Coefficient	CEMS Value	Ref. Method Value	Relative Accuracy(%)
GTG #1 (90AR106B)	SO2	2/28/2020	EPA M-6C Spec2	0.06	0.066	0.25	0.19	0.7
GTG #1 (90AR105B)	CO	2/28/2020	EPA M-10 Spec4A	1.59	2.13	3.25	1.67	1.8
GTG #1 (90AR103B)	NOx	2/28/2020	EPA M-7E Spec2	0.03	1.007	11.46	11.49	9.7
GTG #1 (90AR108B)	NH3	2/28/2020	BAAQMD ST-1B	0.26	0.336	1.23	1.49	0.6
GTG #1 (90AR104)	O2	2/28/2020	EPA M-3A Spec3	0.03	0.112	14.34	14.31	0.14
GTG #2 (90AR206B)	SO2	2/27/2020	EPA M-6C Spec2	0.01	0.115	0.2	0.16	0.7
GTG #2 (90AR205B)	CO	2/27/2020	EPA M-10 Spec4A	2.45	0.087	4.67	2.23	2.5
GTG #2 (90AR203B)	NOx	2/27/2020	EPA M-7E Spec2	0.22	0.071	11.98	12.2	2.4
GTG #2 (90AR208B)	NH3	2/27/2020	BAAQMD ST-1B	0.842	0.072	0.002	0.84	0.9
GTG #2 (90AR204)	O2	2/27/2020	EPAM-3A Spec3	0.1	0.046	14.4	14.3	0.1
GTG #3 (90AR306B)	SO2	2/26/2020	EPA M-6C Spec2	0.04	0.05	0.16	0.12	0.5
GTG #3 (90AR305B)	CO	2/26/2020	EPA M-10 Spec4A	1.24	0.159	4.28	3.04	1.4
GTG #3 (90AR303B)	NOx	2/26/2020	EPA M-7E Spec2	0.31	0.159	7.57	7.88	6.0
GTG #3 (90AR308B)	NH3	2/26/2020	BAAQMD ST-1B	1.26	0.203	0.170	1.43	1.5
GTG #3 (90AR304)	O2	2/26/2020	EPAM-3A Spec3	0.26	0.135	14.85	14.6	0.3